Notes on Grasses (Poaceae) for the *Flora of China*, II: Paniceae

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ABSTRACT. This paper comprises nomenclatural changes needed for the *Flora of China* account of Poaceae tribe Paniceae. The new combinations *Digitaria fujianensis* and *Pseudoraphis sordida* are proposed for nomenclatural reasons. The varietal combination *Ottochloa nodosa* var. *micrantha* is validated and lectotypified. *Pseudoraphis balansae* is lectotypified, and *P. longipaleacea* is placed in synonymy. *Urochloa cordata* is reduced to synonymy under *U. setigera*. The three species of the genus *Pseudoraphis* occurring in China are reviewed and a key is provided. African specimens previously considered conspecific with Asian *Urochloa setigera* are shown to belong to a different species, *Urochloa trichopodioides*, which is lectotypified.

Key words: Africa, Asia, China, *Digitaria*, *Ottochloa*, Poaceae, *Pseudoraphis*, tribe Paniceae, *Urochloa*.

During work on the tribe Paniceae for the grass family account for the *Flora of China*, the following nomenclatural changes were found to be necessary. The opportunity is also taken here to briefly review the species of *Pseudoraphis* occurring in China, as there has been much confusion in the application of names.

DIGITARIA HALLER

Digitaria fujianensis (L. Liou) S. M. Phillips & S. L. Chen, comb. nov. Basionym: *Leptoloma fujianensis* L. Liou, Bot. Res. Academia Sinica 1: 41, f. 1. 1983. TYPE: China. Fujian: Lian-cheng, 20 Sep. 1932, *Ling Yung 3339* (holotype, PE).

This species belongs to the small group of *Digitaria* that was formerly separated as *Leptoloma* because of the diffuse paniculate inflorescence, for example by Hitchcock (1935: 563). However, the spikelets are typical of *Digitaria*, and the inflorescence may merely be an extreme expression of a loosening of the racemes seen elsewhere in this variable genus. *Digitaria fujianensis* is similar to *D. cognata* (Schultes) Pilger from the eastern United States, but this has smaller (2.5–3 mm) spikelets and shorter leaf blades. *Digitaria tomentosa* (Koenig) Henrard from Thailand and southern India also has an open paniculate inflorescence, but differs by its broader leaf blades up to 8 mm wide, and especially by the smaller (2.2–2.5 mm) spikelets with tiny glumes.

OTTOCHLOA DANDY

Ottochloa nodosa (Kunth) Dandy var. **micrantha** (Balansa ex A. Camus) S. M. Phillips & S. L. Chen, comb. nov. Basionym: *Hemigymnia arnottiana* Stapf var. *micrantha* Balansa ex A. Camus, in Lecomte, Fl. Indo-Chine 7: 455. 1922. TYPE: Vietnam. Tonkin, Lankok valley, 11 Oct. 1887, *B. Balansa 1609* (lectotype, designated here, K).

This is a small-spiculate variant of *Ottochloa nodosa*, a rambling grass widespread in shady places in the Old World tropics. The paniculate inflorescence can be variable, with the spikelets usually arranged in bunches or small dense racemelets along the primary branches, but sometimes looser with less obvious spikelet clusters. The spikelets are normally about 3 mm long, but some specimens from southern China (Guangdong and Hainan) and Vietnam have smaller (2–2.5 mm) spikelets that are always borne in neat appressed racemelets. This variant has long been recognized as meriting separate status, but the name has never been validly published in *Ottochloa*.

The genus *Hemigymnia* Stapf (1920) is illegitimate, as it is a later homonym of *Hemigymnia* Griffith (1842), but the epithet *micrantha* is validly published and available.

P. C. Keng (1976: 160) was the first to transfer the taxon to *Ottochloa* as *O. nodosa* var. *micrantha* (Balansa ex A. Camus) P. C. Keng, but the combination is invalid because it lacks the basionym ref-

erence (Art. 33.3 of the ICBN; Greuter et al., 2000). T. D. Zhuang also placed it in *Ottochloa* (1990: 222), attributing the combination to P. C. Keng, but again the combination is invalid because it lacks a correct basionym author and reference (Art. 33.3).

This taxon was first recognized by Balansa (1890: 142) as *Panicum nodosum* Kunth var. *micrantha*, a nomen nudum based on three of his collections (*Balansa 480, 1609, 1610*). These collections are all represented in the Kew herbarium, and the best is selected here as lectotype.

Pseudoraphis Griffith

Pseudoraphis is a small genus of closely related species occurring from India to China and Japan and in southeast Asia and Australia. There is no overall account of the genus, and specimens have frequently been assigned to the most widespread species, *P. spinescens* (R. Brown) Vickery, both in the herbarium and literature, which in fact belong to other species. One of these species of *Pseudoraphis* is known under an incorrect name. The species of *Pseudoraphis* occurring in China are set out below, with notes on differences from *P. spinescens*. The following key lists the main distinguishing characters.

Key to the Species of *Pseudoraphis* in China

1a. Inflorescence open, lanceolate to ovate; racemes spreading, 2–3-spiculate . . . . . *P. brunoniana*
1b. Inflorescence contracted, linear or oblong; racemes erect, usually 1-spiculate.
  2a. Spikelets numerous (more than 30); upper glume longer than lower lemma, narrowly acuminate; lower lemma 7-veined; 2 stamens in lower floret . . . . . *P. sordida*
  2b. Spikelets 10 or less; upper glume slightly shorter than lower lemma, acute; lower lemma 13-veined; 3 stamens in lower floret . . . . . *P. balansae*

Pseudoraphis brunoniana (Wallich & Griffith ex Griffith) Griffith ex Pilger, Not. Bot. Gart. Berlin 10: 210. 1928. Basionym: *Panicum brunonianum* Wallich & Griffith ex Griffith, J. Asiat. Soc. Bengal 5: 574. 1836. *Chamaeraphis spinescens* (R. Brown) Poiret var. *brunoniana* (Wallich & Griffith ex Griffith) J. D. Hooker, Fl. Brit. Ind. 7: 62. 1896. *Chamaeraphis brunoniana* (Wallich & Griffith ex Griffith) A. Camus, in Lecomte, Fl. Gen. Indo-Chine 7: 479. 1922. TYPE: Bangladesh ("Bengal"). Sylhet district, near Goalnuyar, 28 Sep. 1835, *W. Griffith* (locality uncertain).

Distribution. Northeastern India, Myanmar, Thailand, southeastern China, Taiwan, Vietnam, the Philippines.

This species was originally described as *Panicum brunonianum* by Griffith (1836), but in a later publication (Griffith, 1851a, Notulae: 29) he gave it a new name in *Panicum*, *P. intermedium*, based on the same specimen. *Panicum intermedium* Griffith is therefore an illegitimate superfluous name according to the ICBN (Art. 52.1; Greuter et al., 2000). In the 1851 *Notulae* the combination *Pseudoraphis brunoniana* is also listed, apparently as a synonym or alternative name for *Panicum intermedium*, and is therefore invalid (Art. 34.1). To complicate matters further, the illustrations published to accompany the *Notulae* (Griffith, 1851b, Icones, t. 145, fig. 1), revert to the earlier valid name *Panicum brunonianum*. Both the Griffith *Notulae* and *Icones* of 1851 were arranged and published posthumously by John M'Clelland, which probably accounts for the confusion. The combination *Pseudoraphis brunoniana* was first made validly by Pilger in 1928.

The name *Holcus natans* Roxburgh ex J. D. Hooker (1896: 62) is invalid, as it was published as a synonym of *Chamaeraphis spinescens* var. *brunoniana* (Art. 34.1; Greuter et al., 2000). It is based on a specimen from "Lower Bengal" in *Herb. Roxburgh* (K).

There is a Griffith specimen in the Kew herbarium, collected on 28 September 1835, but with the locality "Jheel of the Magna." The inflorescence is young with almost erect branches, and therefore does not correspond to the ovate inflorescence described in the protologue. The original drawing by Griffith for his *Icones* (1851b, t. 145) is in the archives of the Kew library. This depicts an ovate inflorescence, but bears the date "Sept. 17.37." No lectotypification is made here because of the possibility that the holotype from Goalnuyar may still be extant in Calcutta.

Pseudoraphis brunoniana was mistakenly stated by Bor (1960: 353) to occur in Ceylon. The grass described under this name from Ceylon by Lazarides (1994: 383) is a specimen of *P. spinescens*. In fact, specimens from throughout the range of this species have usually been assigned to *P. spinescens*. It was evident, when examining specimens from China, that they differed in several important respects from material from Australia (including the type of *P. spinescens*) and also most material from India.

Bor distinguished *Pseudoraphis spinescens* and *P. brunoniana* on spikelet size, and this has been the cause of confusion. Both species are variable in this character, and specimens used by Bor from northeast India (Assam, Bengal) and adjoining parts of Myanmar have exceptionally large spikelets. *Pseudoraphis spinescens* has racemes with 5 to 10 or

more spikelets lying more or less end-to-end, whereas racemes in *P. brunoniana* bear only 2 or 3 (occasionally 1) distant spikelets, usually with a longer terminal bristle, resulting in an immediate difference in facies. The culm nodes in *P. spinescens* are sericeous, appearing as a shiny white band of appressed silky hairs, whereas the nodes in *P. brunoniana* are merely pubescent. There is also a subtle difference in spikelet shape, as *P. spinescens* has a caudate upper glume much exceeding the lower lemma, while in *P. brunoniana* the glume is narrowly acuminate and extends beyond the lower lemma to a lesser extent.

The few specimens seen from China are cited below.

CHINA. **Guangdong:** Guangzhou [Canton], Apr. 1878, *T. Sampson 367* (K), May 1864, *Sampson in Herb. Hance 11077* (K), May 1884, *T. Sampson s.n.* (K).

Pseudoraphis sordida (Thwaites) S. M. Phillips & S. L. Chen, comb. nov. Basionym: *Panicum sordidum* Thwaites, Enum. Pl. Zeyl. 443. 1864. TYPE: Sri Lanka. *G. Thwaites C.P. 3857* (isotype, K).

Chamaeraphis spinescens var. *depauperata* Nees ex J. D. Hooker, Fl. Brit. Ind. 7: 62. 1896. *Pseudoraphis depauperata* (Nees ex J. D. Hooker) Keng, Sinensia 11: 43. 1940. *Chamaeraphis squarrosa* (L. f.) Merrill var. *depauperata* (Nees ex J. D. Hooker) Masamune, Trans. Nat. Hist. Soc. Formosa 30: 18. 1940. *Pseudoraphis squarrosa* (L. f.) Chase var. *depauperata* (Nees ex J. D. Hooker) Hara, J. Jap. Bot. 17: 398. 1941. *Pseudoraphis spinescens* var. *depauperata* (Nees ex J. D. Hooker) Bor, Grasses of Burma, Ceylon, India and Pakistan: 354. 1960. TYPE: India. *R. Wight 1654* (holotype, K).

Pseudoraphis ukishiba Ohwi, Act. Phytotax. Geobot. 10: 273. 1941. TYPE: Japan. Hondo, Shimamura, 25 Aug. 1931, *Hashimoto s.n.* (holotype, KYO).

Distribution. India, Ceylon, China, Japan, Korea.

Bor (1960: 352) aptly described this grass as having a "*Pennisetum*-like" inflorescence. The contracted inflorescence is indeed quite different from the open inflorescence of *P. spinescens*, of which it was made a variety by Bor and others. Both Keng and Ohwi recognized its separate specific status, but unfortunately overlooked the epithet from Ceylon. The habit is more slender than that of *P. spinescens*, and the internodes are frequently purple-tinged. It also differs by its clearly ciliate ligule and the presence of only two stamens. This species was omitted from the recent account of the genus in Ceylon (Lazarides, 1994).

Steudel (1854) made it quite clear that he was placing this taxon as a variety under *Panicum asperum* Wight, citing the manuscript name *Chamaeraphis depauperata* Nees as basionym, but he did not definitely make the varietal combination (Art. 33.1; Greuter et al., 2000). The name *C. depauperata* was also not validly published as a species by Steudel, as it is included under *Panicum asperum* (itself an illegitimate homonym). The earliest valid name at specific level for this grass is *Panicum sordidum* Thwaites. The necessary new combination under *Pseudoraphis* is made here.

Pseudoraphis balansae Henrard, Blumea, Suppl. 1: 230, t. 17. 1937. TYPE: Vietnam. Annam, 25 Oct. 1886, *Balansa* in Herb. Lugd. Bat. 908. 85-1414 (lectotype, designated here, L).

Pseudoraphis longipaleacea Chia, Fl. Hainan. 4: 442, 540, f. 1232. 1977. Syn. nov. TYPE: China. Hainan I.: Dongfang, 12 Sep. 1936, *Liou 27870* (holotype, SCBI not seen).

Distribution. Vietnam, Thailand, China (Hainan).

This species appears to be of restricted distribution and is known from very few collections. It is distinctive in the genus because of its merely acute spikelets lacking the drawn-out narrow apex on the upper glume found in most species. The short subacute leaves, white-membranous truncate ligule, and few-spiculate inflorescence are also characteristic.

There are three sheets of this species collected by Balansa in the Leiden herbarium, which have been annotated by Henrard as types, and seven other Balansa sheets, all of which are probably duplicates of the same collection. None bear collecting numbers, only herbarium sheet numbers. Henrard in his protologue stated there are "specimina multa legit Balansa." The sheet selected here as lectotype is chosen because it corresponds to a sheet number given by Henrard. The specimen itself has not been seen, but its image has been checked on the Internet ⟨http://www.nationaalherbarium.nl⟩.

A photocopy of the type specimen of *Pseudoraphis longipaleacea* is available at Kew and this, together with the illustration in the protologue, clearly shows that this species is a good match with *P. balansae*.

Urochloa P. Beauvois

When writing the account of *Urochloa* for the *Flora of Tropical Africa*, Stapf (1920: 598) included some specimens from East Africa under *Panicum setigerum*, at the same time transferring the species to *Urochloa*. This species was known from India and Sri Lanka, where it is widespread, and even then

Stapf pointed out that the African specimens differed by their glabrous spikelets. He also wrote that the type was "stated to have been collected in China by Bladh; but there is no other record of its occurrence in that country," perhaps implying that he considered the collecting locality incorrect. However, *U. setigera* is now known from Myanmar and Thailand, and *U. cordata* is a good match, confirming the presence of this species in tropical southern China. *Urochloa cordata* is therefore considered to be a new synonym of *U. setigera* (see below). The type of *Urochloa setigera* Retzius, collected by Bladh in the 18th century, is in the herbarium at Lund. Although there has been no possibility to see the type, there is ample material of *U. setigera* from Asia at Kew for comparative purposes.

Stapf's treatment has been followed in recent Floras, but study of the species for the *Flora of China* has revealed a number of other differences, enumerated below. It now seems clear that two species should be recognized, as follows:

Urochloa setigera (Retzius) Stapf, in Prain, Fl. Trop. Afr. 9: 598. 1920. Basionym: *Panicum setigerum* Retzius, Obs. Bot. 4: 15. 1786. *Brachiaria setigera* (Retzius) C. E. Hubbard, in Hooker's Icon. Pl. 34: t. 3363. 1938. TYPE: China (Canton). *P. J. Bladh s.n.* (holotype, LD not seen).

Panicum affine Poiret, in Lamarck, Encycl., Suppl. 4: 273. 1816. TYPE: "Indes orientales," *Herb. Desvaux* (holotype, P not seen).

Urochloa cordata Y. L. Keng ex S. L. Chen & Y. X. Jin, Acta Phytotax. Sin. 22: 472. 1984. Syn. nov. TYPE: China. Hainan: *C. Wang 33805* (holotype, SYS).

Leaf blades 8–15 cm long, 18–24 mm wide, margins pectinate-setose, at least to the middle; nodes bearded; inflorescence axis 6–13 cm long bearing 6 to 12 racemes; spikelets pubescent, herbaceous; fertile floret with a very brief mucro 0.1 mm long.

Distribution. India, Ceylon, Myanmar, Thailand, southern China.

Urochloa trichopodioides (Mez & Schumacher) S. M. Phillips & S. L. Chen, comb. nov. Basionym: *Panicum trichopodioides* Mez & Schumacher, Notizbl. Bot. Gart. Berlin-Dahlem 7: 60. 1917. TYPE: Tanzania. Amboni, *C. Holst 2844* (lectotype, designated here, K).

Leaf blades 5.5–10 cm long, 10–18 mm wide, margins scabrid (rarely a few setae at base); nodes glabrous or pubescent; inflorescence axis 1–7 cm long bearing 1 to 7 racemes; spikelets glabrous, thinly cartilaginous, dully shining; fertile floret with a pronounced mucro 0.4–0.6 mm long.

Distribution. Kenya, Tanzania, southern Ethiopia, eastern Congo.

Urochloa trichopodioides was described based on two syntype specimens from Tanzania: Amboni, *C. Holst 2844* (syntype, B; isosyntype, K), and Bukoba, *Herb. Amani 5333* (syntype, B). The species is lectotypified here on the Holst specimen at Kew, which is a good, fully representative collection.

The most important differences between these two species are summarized in the following couplet.

KEY TO DISTINGUISH *UROCHLOA SETIGERA* AND *U. TRICHOPODIOIDES*

1a. Spikelets pubescent; fertile floret with tiny mucro ca. 0.1 mm; racemes 6 to 12; margins of leaf blades pectinate-setose . . *Urochloa setigera* (Asia)

1b. Spikelets glabrous; fertile floret with pronounced mucro 0.4–0.6 mm; racemes 2 to 6; margins of leaf blades scabrid . . . . . *Urochloa trichopodioides* (Africa)

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